*SPECIFICATION PRELIMINARY AMENDMENT*

Please add the following section, preceding the section entitled "FIELD OF THE INVENTION", starting on p. 1, line 12

## STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

This invention was supported in part by grant No. DAAD17-02-C-0101 from the United States Army Research Office. The United States Government has certain rights in the invention.

Please replace the second paragraph starting on p. 16, line 18, with the following paragraph in marked-up form:

The interferometer **500** used as standing wave generators **222**, **225** and **227** is also used to adjust the channel spacing. In an interferometer, a larger the optical path-length difference in the arms of the interferometer will result in a different phase for the fringes in the resultant interference pattern for a given wavelength since $\phi = 2\pi n\Delta d/\lambda$, where $\phi$ is the phase difference between the light in the arms of the interferometer that gives rise to the interference, n is the index of refraction, $\lambda$ is the wavelength and $\Delta d$ is the path-length difference. As described in the theory behind this invention described above, for discrimination between two wavelengths $\lambda_1$ and $\lambda_2$ a relative phase of $\pi/2$ is desired. In this case, the phase difference $\phi$ is

$$\frac{2\cdot\pi\cdot n\cdot\Delta d}{\lambda_1}-\frac{2\cdot\pi\cdot n\cdot\Delta d}{\lambda_2}=\frac{\pi}{2}.$$

Dividing both sides of this equation by 2π yields

$$n\cdot\Delta d\cdot\left(\frac{1}{\lambda_1}-\frac{1}{\lambda_2}\right)=n\cdot\Delta d\cdot\left(\frac{\lambda_2-\lambda_1}{\lambda_1\cdot\lambda_2}\right)=n\cdot\Delta d\cdot\left(\frac{\Delta\lambda}{\lambda_1\cdot\lambda_2}\right)=\frac{1}{4}.$$

For telecommunication applications, wavelengths $\lambda_1$ and $\lambda_2$ are almost the same and can be taken to be approximately equal to wavelength λ, in this case the average of wavelengths $\lambda_1$ and $\lambda_2$. As a result, the required path length difference Δd is inversely proportional to Δλ ~~1/Δλ~~. Thus, increasing the optical-path length difference in the interferometer or the incident angle **516** of the beams of light **506** and **508** reduces the channel spacing. In addition, as mentioned previously in Fig. 10, the period of the fringes in the interference pattern is a function of the incident angle **516** given by λ/(2sin(Ω)).